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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/512,962    02/25/00    TERWILLIGER

T    S-91,732

HM12/0821

EXAMINER

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HARTTER, A

ART UNIT

PAPER NUMBER

1631

DATE MAILED:

08/21/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/512,962

Applicant(s)

TERWILLIGER, THOMAS C.

Examiner

Amy Hartter

Art Unit

1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-9 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *IDS approval*.

### **Answer to Traversal**

The Applicant claims that the inventions represented in Groups I and II are not separate and distinct and that Group I is merely a species of Group II. The Applicant is reminded that even though and if the Groups are solely different embodiments of the other species can and will be separate and distinct inventions. However in addition to this argument the examiner does not see where the Applicant claims in the first group the comparison of the structure factors to the observed factors as is claimed in Group II. Group I appears to be concerned only with the derivation of probability factors and not the analysis those factors and deriving a conclusion from them. Therefore this traversal is not considered persuasive and this restriction is made final.

### **Detailed Action**

Claims 6-9 are rejected under 35 U.S.C. 101 because the claimed invention is non-statutory subject matter.

The instant invention is directed to non-statutory subject matter because it claims a mathematical formula which is not one of the statutory types of patentable inventions. The formula does not manifest itself in material form, but rather only in mathematical/data form.

Claims 6-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable

one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The basis of this rejection is that the Applicant wishes to claim crystals that they desire to make and not those that have been prepared in reality. For example as is stated in Jan Drenth's book "Principles of X-ray Crystallography" (Springer-Verlag New York Inc., 1994, please see Chapter one, page 1, section 1.2), "Protein crystallization is mainly a trial-and-error procedure ..." Indeed the making of crystals is unpredictable and unless they are made in actuality it is very difficult to know what will result. Thus Claims 6-9 are not enabled in this arena for this reason.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6-8 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Xiang et al. (Acta Crystal D –Biological Crystallography, (01 Jan 1993) vol D49 part one, pages 193-212).

Claim 6 and its subsequent dependents 7 and 8 claim a set of structure factors (Fh) and a set of observed structure factors known as (Fobs). The claims describe that the structure factors would be compared to the observed factors for greater accuracy in an electron density map.

The following is a quotation from Xiang et al. (please see page 195 second paragraph).

We can divide the X-ray data into two parts—a basis set of phased reflections (H) and the complementary set (K), for which the phases are unknown. Given any basis set, (H) choosing an appropriate probability distribution for the atomic positions is equivalent to choosing amplitudes and phases for the reflections (K), outside the basis set to modulate the defects in the simple Fourier transform of (H). The resulting conditional probability distribution for the phases in (k) are obtained by a weighting procedure that compares the estimated amplitudes with their corresponding observed values. This amounts to extrapolating phase information from reflections in (H) to those with the unknown phases in (K).

It seems in this situation that the (H) factor established in Xiang et al. corresponds to the (Fh) factor that is established in the instant application. This is also the case with the (K) factor that is established as well in Xiang et al. corresponds to the (Fobs) in the instant application. The two Xiang et al. publication and the instant Application both contain factors that are being compared to result in greater accuracy in an electron density map. The two entitles are striving towards the same goal and appearing to use the same factors to accomplish said goal. In addition the heading on said page 195, first paragraph, clearly indicates the maximizing of part (b) of the instant claim 6.

Therefore these claims are rejected on this basis.

The Applicant is also hereby notified that there is an objection to this Application as follows. The Applicant is notified that it is improper to place periods after sub portions of a claim such as the "a and b" portions of Claim 6. The Applicant must amend this portion of the claim by replacing said periods with, for example, parentheses.

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The Applicant is also hereby advised that the drawings, that were filed 2/25/00, have been accepted on the 326 form, item number 10.

### Conclusion

Any inquiry concerning this communication or earlier communications from this examiner should be directed to Amy Hartter whose telephone number is (703) 305-1696. The examiner can normally be reached Monday-Friday from 8:00 to 4:30 p.m. (Eastern Time)

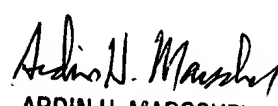
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached at (703) 305-4028. The fax phone numbers for the group are (703) 308-4242 and (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application should be directed to the Patent Analyst, Kim Davis, whose telephone number is (703) 305-3015 or to the Technical Center receptionist whose telephone number is (703) 308-0196.



Amy Hartter

(703) 305-1696



ARDIN H. MARSCHEL  
PRIMARY EXAMINER